



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/035,061	12/28/2001	Christopher P. Ausschnitt	FIS9-2001-0254 US1	3269

32074 7590 11/16/2004

INTERNATIONAL BUSINESS MACHINES CORPORATION
DEPT. 18G
BLDG. 300-482
2070 ROUTE 52
HOPEWELL JUNCTION, NY 12533

EXAMINER

STAFIRA, MICHAEL PATRICK

ART UNIT PAPER NUMBER

2877

DATE MAILED: 11/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Supplemental
Notice of Allowability**

Application No.

10/035,061

Examiner

Michael P. Stafira

Applicant(s)

AUSSCHNITT ET AL.

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed June 4, 2004.
2. ☒ The allowed claim(s) is/are 1,3-7,9-14 and 16-20.
3. ☒ The drawings filed on 28 December 2001 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 12/28/2001
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

Allowable Subject Matter

1. Claims 1, 3-7, 9-14, 16-20 are allowed over the prior art of record.
2. The following is an examiner's statement of reasons for allowance:

Regarding claim 1, the prior art fails to disclose or make obvious a method for measuring lens aberration having the step of a first feature being a blazed grating having a asymmetric pattern rotationally oriented in a first direction and exposing a photosensitive material to illumination energy passing through the first and second features, wherein the blazed grating projects a single beam, to form a first feature image and a second feature image, and in combination with the other recited limitations of claim 1. Claim 3 is allowed by the virtue of dependency on the allowed claim 1.

Regarding claim 4, the prior art fails to disclose or make obvious a method for measuring lens aberration having the step of computing a lens aberration parameter in accordance with the relative location, wherein the test pattern comprises a box-in-box pattern having an inner and an outer box and the first feature comprises one of the inner or outer box, and the first feature further comprises a blazed grating having a first orientation, and in combination with the other recited limitations of claim 4. Claims 5-6 are allowed by the virtue of dependency on the allowed claim 4.

Regarding claim 7, the prior art fails to disclose or make obvious a method of measuring lens aberration having the steps of providing a reticle having a plurality of test patterns, each of the test patterns including and associated with a first feature and a second feature, each of said first feature having a blazed grating, wherein each of said blazed gratings has an associated

Art Unit: 2877

grating orientation different from the orientation of each of the others of said plurality of test patterns; exposing a photosensitive material through said plurality of test patterns to form a plurality of test images, wherein each of said blazed gratings projects a single beam, each of said test images having a first image formed from said first feature and an associated second image formed from said second feature of the associated test pattern, and in combination with the other recited limitations of claim 7. Claim 9 is allowed by the virtue of dependency on the allowed claim 7.

Regarding claim 10, the prior art fails to disclose or make obvious a method of measuring lens aberration having the steps of computing a lens aberration property in accordance with the set of relative locations, wherein the first feature comprises one of the inner or outer box, and the first feature further comprises a blazed grating having a first orientation, and in combination with the other recited limitations of claim 10. Claim 11 is allowed by the virtue of dependency on the allowed claim 10.

Regarding claim 12, the prior art fails to disclose or make obvious a method for measuring lens aberration having the step of a first vertical feature and a second vertical feature, wherein said first vertical feature comprises a first vertical blazed grating having a first horizontal orientation, and wherein said second vertical feature comprises a second vertical blazed grating having a second horizontal orientation pointing in a direction opposite that of said first horizontal orientation, said test pattern further comprising a first horizontal feature and a second horizontal feature, wherein said first horizontal feature comprises a first horizontal blazed grating having a first vertical orientation, and wherein said second horizontal feature comprises a second vertical orientation pointing in a direction opposite that of said first vertical orientation,

Art Unit: 2877

and said exposing further comprises forming first and second vertical images associated with said first and second vertical features, respectively, and forming said first and second horizontal images associated with said first and second horizontal features, respectively, and said measuring further comprises measuring a vertical relative location and a horizontal relative location, and wherein said lens aberration property comprises focus aberration, and in combination with the other recited limitations of claim 12.

Regarding claim 13, the prior art fails to disclose or make obvious a method for measuring lens aberration having the steps of a box-in-box pattern having an outer box and an inner box nested on a common center point, wherein said outer box comprises upper and lower horizontal elements and left and right vertical elements, said upper horizontal element comprising a blazed grating having an orientation pointing vertically upward, said lower horizontal element comprising a blazed grating having an orientation pointing vertically downward, said left vertical element comprising a blazed grating having an orientation pointing to the left, said right vertical element comprising a blazed grating having an orientation pointing to the right, and said inner box providing zero degree phase shift, and wherein said exposing further comprises forming outer and Inner box images associated with said outer box and said inner box, respectively, and said measuring comprises determining center points of said outer and inner box images, and determining a shift of the center of said outer box image relative to the center of said inner box image, and wherein said lens aberration property comprises coma, and in combination with the other recited limitations of claim 13.

Regarding claim 14, the prior art fails to disclose or make obvious a reticle for measuring lens aberration a test pattern having a first feature and a second feature, the first

Art Unit: 2877

feature comprising a blazed grating capable of forming an asymmetric pattern of illumination energy passing there through and projecting a single beam, and said asymmetric pattern rotationally oriented in a first direction. Claim 15 is allowed by the virtue of dependency on the allowed claim 14.

Regarding claim 17, the prior art fails to disclose or make obvious a reticle for measuring lens aberration having a plurality of test patterns, each of said test patterns including and associated with a first feature and a second feature, each of said first features comprising a blazed grating capable of forming an asymmetric pattern of illumination energy passing there through and projecting a single beam, said asymmetric pattern having a rotational orientation different from the orientation of each of the other of said plurality of test patterns. Claim 18 is allowed by the virtue of dependency on the allowed claim 17.

Regarding claim 19, the prior art fails to disclose or make obvious a reticle for measuring lens aberration wherein said test pattern further comprises a first vertical feature and a second vertical feature, wherein said first vertical feature comprises a first vertical blazed grating having a first horizontal orientation, and wherein said second vertical feature comprises a second vertical blazed grating having a second horizontal orientation pointing in a direction opposite that of said first horizontal orientation, said test pattern further comprising a first horizontal feature and a second horizontal feature, wherein said first horizontal feature comprises a first horizontal blazed grating having a first vertical orientation, and wherein said second horizontal feature comprises a second vertical orientation pointing in a direction opposite that of said first vertical orientation, and in combination with the other recited limitations of claim 19.

Art Unit: 2877

Regarding claim 20, the prior art fails to disclose or make obvious a reticle for measuring lens aberration wherein said test pattern further comprises a box-in-box pattern having an outer box and an inner box nested on a common center point, wherein said outer box comprises upper and lower horizontal elements and left and right vertical elements, said upper horizontal element comprising a blazed grating having an orientation pointing vertically upward, said lower horizontal element comprising a blazed grating having an orientation pointing vertically upward, said lower vertical element comprising a blazed grating having an orientation pointing to the left, said right vertical element comprising a blazed grating having an orientation pointing to the right, and said inner box providing zero degree phase shift, and in combination with the other recited limitations of claim 20.

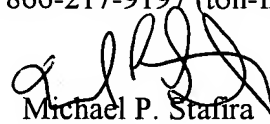
Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P. Stafira whose telephone number is 571-272-2430. The examiner can normally be reached on 4/10 Schedule Mon.-Thurs..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Toatley can be reached on 571-272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2877

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael P. Stafira
Primary Examiner
Art Unit 2877

November 15, 2004